

CLAIMS

We claim:

1. A liquid crystal display, comprising:

a liquid crystal panel having a reflective polarizing element; and

a backlight module having a light source, a light guide plate, a reflector, and a quarter-wave plate, the light source being disposed adjacent to the light guide plate, and the reflector, the light guide plate and the quarter-wave plate being stacked together in order;

wherein, the liquid crystal panel is located on the backlight module, and the reflective polarizing element of the liquid crystal panel faces toward the quarter-wave plate of the backlight module.

2. The liquid crystal display of claim 1, wherein the reflector is attached to a bottom surface of the light guide plate.

3. The liquid crystal display of claim 1, wherein the quarter-wave plate is attached to an upper surface of the light guide plate.

4. The liquid crystal display of claim 1, further comprising a diffuser disposed between the liquid crystal panel and the quarter-wave plate.

5. The liquid crystal display of claim 4, further comprising a brightness enhancing film disposed between the diffuser and the liquid crystal panel.

6. The liquid crystal display of claim 1, wherein the quarter-wave plate is made of mica.

7. The liquid crystal display of claim 1, wherein the quarter-wave plate is made of polyvinyl alcohol.

8. A backlight module, comprising:

a light source for emitting light beams;
a light guide plate for receiving and transferring the light beams;
a reflector disposed behind the light guide plate; and
a quarter-wave plate for changing a polarization state of the light beams;

wherein the light source is disposed adjacent to the light guide plate, and the reflector, the light guide plate and the quarter-wave plate are stacked together in order.

9. The backlight module of claim 8, wherein the reflector is attached to a bottom surface of the light guide plate.

10. The backlight module of claim 8, wherein the quarter-wave plate is attached to an upper surface of the light guide plate.

11. The backlight module of claim 8, wherein the quarter-wave plate is made of mica.

12. The backlight module of claim 8, wherein the quarter-wave plate is made of polyvinyl alcohol.

13. A method of making a liquid crystal display system, comprising steps of:
providing a liquid crystal panel;

providing a backlight module located behind the liquid crystal panel and including a light source with a light guide plate beside said light source, a quarter-wave plate and a reflector located in front of and behind said light guide plate, respectively; and

providing one reflective polarizing element on a rear portion of the liquid crystal panel and in front of the quarter-wave plate; wherein

reflection occurs on said reflector and said reflective polarizing element,

respectively.

14. The method of claim 13, wherein in a light a p-polarization component is reflected by said reflective polarizing element, and passes the quarter-wave plate twice and the reflector once, thus resulting in a conversion of “a p-polarization component → a clockwise circular polarization component → a counterclockwise circular polarization component → an s-polarization component” before said reflected and reformed p-polarization component hits said reflective polarizing element again.